CLAIMS

We claim:

1. A variable attenuator assembly for attenuating optical signals transmitted between a first and a second optical fibers, comprising:

a plug-type connector terminating the second optical fiber;

a coupling sleeve open at two opposite ends; and

a variable attenuating connector (VAC) terminating the first optical fiber, comprising:

a stationary housing defining a longitudinally extending bore and having a rear end;

a connecting member attached to the rear end of the stationary housing and defining an internally-threaded bore;

a tubular knob having an external threads of a first screw pitch and an internal threads of a second screw pitch, the first and second screw pitches being different, the tubular knob being partially received in the connecting member with the external threads of the knob mating with the internally-threaded bore of the connecting member; and

a ferrule holder defining a central bore adapted to receive and retain an optical fiber therein, the holder being received in the tubular knob and the stationary housing and having external threads mating with the internal threads of the knob;

wherein rotating the knob induces a first linear displacement of the knob with respect to the connecting member and the stationary housing and a second linear displacement of the holder with respect to the knob, the first linear displacement being dependent upon the first screw pitch and the second linear displacement being dependent upon the second screw pitch, whereby the optical fiber is moved with the holder an overall displacement corresponding to the sum of the first and second linear displacements.

2. The variable attenuator assembly as claimed in Claim **1**, wherein the variable attenuating connector further comprises a mounting member attached to the rear end of the stationary housing and defining an external-threaded section and a bore.

3. The variable attenuator assembly as claimed in Claim **1**, wherein the internal threads and the external threads of the knob are arranged such that the first and second displacements are in opposite directions whereby the overall displacement of the optical fiber relative to the stationary housing is the difference between absolute values of the first and second displacements.

4. The variable attenuator assembly as claimed in Claim **1,** further comprising an external housing mounted to a front end of the stationary housing for securing the variable attenuating connector to the coupling sleeve.

5. The variable attenuator assembly as claimed in Claim **1,** further comprising a biasing element arranged between the stationary housing and the holder for biasing the holder.

6. The variable attenuator assembly as claimed in Claim **5**, wherein the biasing element comprises a helical spring disposed between a front end of the ferrule holder and a U-clip inside the housing.

7. The variable attenuator assembly as claimed in Claim **1**, wherein the connecting member forms two grooves which engage with two holding beams formed at the rear end of the housing.

8. The variable attenuator assembly as claimed in Claim **1**, wherein the ferrule holder has an enlarged front end forming a receptacle which receives and retains a ferrule to which the optical fiber is attached.

9. The variable attenuator assembly as claimed in Claim **1**, wherein the ferrule holder forms radially protruding stoppers engaging keyways defined in the sides of the stationary housing for preventing rotation of the holder relative to the housing.

10. A variable attenuating connector (VAC) terminating a first optical fiber, comprising:

a stationary housing defining a longitudinally extending bore and having a rear end;

a connecting member attached to the rear end of the stationary housing and defining an internally-threaded bore;

a tubular knob having an external threads of a first screw pitch and an internal threads of a second screw pitch, the first and second screw pitches being different, the tubular knob being partially received in the connecting member with

the external threads of the knob mating with the internally-threaded bore of the connecting member; and

a ferrule holder defining a central bore adapted to receive and retain the first optical fiber therein, the holder being received in the tubular knob and the stationary housing and having external threads mating with the internal threads of the knob;

wherein rotating the knob induces a first linear displacement of the knob with respect to the connecting member and the stationary housing and a second linear displacement of the holder with respect to the knob, the first linear displacement being dependent upon the first screw pitch and the second linear displacement being dependent upon the second screw pitch, whereby the optical fiber is moved with the holder an overall displacement corresponding to the sum of the first and second linear displacements.

11. The variable attenuating connector as claimed in Claim **10**, wherein the variable attenuating connector further comprises a mounting member attached to the rear end of the stationary housing and defining an external-threaded section and a bore.

12. The variable attenuating connector as claimed in Claim **10**, wherein the internal threads and the external threads of the knob are arranged such that the first and second displacements are in opposite directions whereby the overall displacement of the optical fiber relative to the stationary housing is the difference between absolute values of the first and second displacements.

13. The variable attenuating connector as claimed in Claim **10,** further comprising an external housing mounted to a front end of the stationary housing for securing the variable attenuating connector to a coupling sleeve.

14. The variable attenuating connector as claimed in Claim **10,** further comprising a biasing element arranged between the stationary housing and the holder for biasing the holder.

15. The variable attenuating connector as claimed in Claim **14,** wherein the biasing element comprises a helical spring disposed between a front end of the ferrule holder and a U-clip inside the housing.

16. The variable attenuating connector as claimed in Claim **10,** wherein the connecting member forms two grooves which engage with two holding beams formed at the rear end of the housing.

17. The variable attenuating connector as claimed in Claim **10,** wherein the ferrule holder has an enlarged front end forming a receptacle which receives and retains a ferrule to which the optical fiber is attached.

18. The variable attenuating connector as claimed in Claim **10,** wherein the ferrule holder forms radially protruding stoppers engaging keyways defined in the sides of the stationary housing for preventing rotation of the holder relative to the housing.

19. A variable attenuator assembly for attenuating optical signals transmitted between first and second optical fibers, comprising:

a coupling sleeve open at opposite first and second ends;

a plug-type connector with the second optical fiber, being inserted into the coupling sleeve through said second end;

a variable attenuating connector with the first optical fiber, being inserted into the coupling sleeve through said first end,

said variable attenuating connector comprising:

a stationary housing retained in the coupling sleeve;

a stationary connection member located around a rear portion of the stationary housing and providing an internally threaded bore therein;

a rotatable tubular knob defining external threads with first screw pitch and internal threads with second screw pitch, the external threads engaged within the threaded bore of connector member; and

an irrotational ferrule holder holding the fiber therewith and extending axially in the stationary housing and the rotatable tubular knob, said ferrule holder providing external threads engaged with the internal threads of the knob; wherein

rotation of the knob results in an axial linear displacement of said ferrule holder with an amount being a difference between the first screw pitch and the second screw pitch.